Role of Trust and Network in Accessing Business Credits

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1 Introduction

Role of the financial system of an economy is vital for its overall economic growth and development, especially in developing economies (Arestis & Demetriades, 1997; Beck & Levine, 2004). It is a medium for the flow of idle cash of the household sector to productive asset creation in the real sector. For instance, banks help in mobilizing savings of the individuals and at the same time extend credit to the real sector for investment purpose. Therefore, financial institution are important agents in supporting efficient economic activities (Rajan & Zingales, 1998). Moreover, it helps in the allocation of financial resources with an informational advantage (Ozhan, 2019). Some specialized institutions like banks, mutual funds, non-banking financial companies, etc., are engaged in this dual financial role: borrowing from the public and lending to investors. These institutions expose themselves to credit risk by lending to firms for earning spread (lending rate less borrowing rate). The credit risk arises due to the presence of informational asymmetry between firms and lenders (Stiglitz & Weiss, 1981). For instance, after sanctioning the credit, the borrower may invest in risky projects which is costly for the lender to observe and monitor. Therefore, the lender has to take all information into account while extending credits. Asymmetric information between lender and borrower leads to uncertainty in ex-post revenue of the lender. With this risk, certain borrowers are not able to access credits, which in turn leads credit rationing (Bester, 1985; Stiglitz & Weiss, 1981). The lender may demand sufficient liquid collateral to reduce the risk associated with the credit default. In particular, credit risk is more likely to be higher for small business due to non-availability of hard information. This limits their borrowing ability in the formal credit market (Berger & Udell, 2002). However, in developing countries, small businesses are important from economic growth and employment generation perspective (Chu et al., 2007; C. Y. Lee, 1998; Lin, 1998). Therefore, adequate credit flows are important in the growth and sustainability of this business. Although from the development purpose the credit flow is important, but lending institutions may hesitate to lend due to relatively higher information asymmetry. Another constraint that restricts small businesses to access credit is non-availability of marketable highly liquid collaterals. All these limiting forces incentivise small business owners to approach their social network informal credit. For instance, Turvey & Kong (2010) show it for China that borrowers with a higher level of trust prefer informal borrowing than formal borrowings. So we can say, the trust social and economic network may play a significant role in helping borrowers to access higher credit. Trustworthiness of the borrower in the network helps in accessing credit risk, and in turn, reduces the price of the credit. This thesis addresses above discussed fundamental issues in credit rationing. First, it builds a calculative trust which helps a trustworthy borrower to access higher credit. Second, it uses social and economic network of the borrower and lender to reduce informational asymmetry and eases credit constraints.

Our first objective in this thesis is to design a metric that will help the lender to assess the creditworthiness of the borrower and also borrower to access credit with lesser liquid collateral. The designed metric incentivise the borrower to reveal the true nature of the project, such as future cash flows, without inflating it. This helps the borrower to access a higher amount of credit with lesser collateral in the future. Our second objective in the thesis focuses on the importance and usefulness of the social network in accessing the credit. The social and economic network of the borrower is important for the lender to acquire the creditworthiness information of the borrower and price the loans based on it. This social and economic network also helps the borrower in easy access of the credits. The third objective of this thesis is to show the benefits reaped by a trustworthy borrower through easy and timely access of the credit with lower cost. More specifically, the objective shows how trust plays an important role on borrower's preference over formal and informal lenders.

2 Credit Rationing and Small Firms

Among the borrowers, there are large, medium, and small size borrowers. Large and listed borrowers raise part of their funds from the equity market directly from the public by selling their ownership in the form of equities. These borrowers announce their balance sheet periodically and some important decisions made by the management during the accounting periods. This information is taken into account in the pricing of the stocks of the firm. Which in turn reduces information asymmetry. While medium and some unlisted large firms publish their balance sheet. For these firms, information asymmetry is less because they are not listed. But in the case of small and micro enterprises asymmetry of information is very high due to non-availability of the above type of hard information. The hard information means here, the information presented in the balance sheet, income statement, cash flow statement , etc. (Bertomeu & Marinovic, 2016; Godbillon-Camus & Godlewski, 2005). Higher the hard information lower is information asymmetry and *vice-versa*. An advantage of hard information is, it is uniform for all observers. This helps in proper assessment of the borrower's health and hence credit risk exposure evaluation. In the case of the small business borrowers, the unavailability of hard information may lead to a higher informational opaqueness.

Small businesses can finance their projects from different sources: banks, funds from relatives, funds from informal money lenders, microfinance institutions etc. Researchers find that large banks have a comparative advantage in lending to larger businesses with hard information and small banks provide loans on soft information (Berger et al., 2011). Haynes et al. (1999) from 1993 National Survey of Small Business Finances (NSSBF) data by Federal Reserve states that large banks more likely to lend to large firms compared to small firms. Large banks extend credit to firms with more secured financial statement, age, etc. (Berger & Udell, 1995). Non-availability of above kind of hard and publicly observable information brings credit constraints to small firms. Soft information, such as trustworthiness and willingness to pay, are non-quantifiable and they are subjective, however, they play a vital role small businesses to access business credit. Therefore it is very difficult to asses this information while underwriting the loan contract. In general, lending institutions follow different lending technology to extend credit. These lending technologies use both hard and soft information to assess the creditworthiness of the borrowers. According to Berger & Udell (2002) some of the technologies are :

- Financial Statement Based Lending: In this type of lending the banks provide the credit based on the health of the balance sheet and income statement. This is based on hard information. This gives a more accurate picture of the creditworthiness of the firm. Based on this accuracy predictability power, banks provide credit and consider this into pricing of the credit.

- Asset Based Lending: In this type of lending, banks provide credit based on assets, net worth, and liquidity of the firm. The assets play a very important role in guaranteeing the credits. These assets are marketable and can be used as collateral while accessing credit. This helps the lending institutions in mitigating the risk in worse cases.

- Credit Scoring: Credit scoring acts as an important decisive variable while providing the credits. The credit score reveals the creditworthiness of a firm. Thus, depending upon the credit score, banks predict the likelihood of default. Large businesses have this advantage of having credit score than small businesses. Therefore this constraints small businesses in accessing credit.

- Factoring: This is a method where banks provide credit on receivable items. While lending through this technology, banks take the risk from the side where receivables will come.

- Trade Credit : A trade credit is an agreement between a buyer and a seller where a seller can purchase goods through credit account (without paying cash), and paying the supplier at a later date.

- Relationship Lending: This type of lending is different and uses soft information. The lender extends credit based on the relationship it had with the borrower. Higher the relationship strength, borrower is less likely to be credit constrained (Cole et al., 2004).

Among the above relationship lending is widely used for borrowers with less hard information. In this technology, the lenders extend the credit based on past information they have about the borrower in their long term association/relationship (Petersen & Rajan, 1994). This long term association helps the lender in proper evaluation of the creditworthiness. Addition to relationship lending, credit scores are now being assigned to evaluate the creditworthiness. For instance, the small and micro enterprises (SME) Rating Agency (SMERA) rates SMEs and have objective to help these enterprises to access higher credit. But this technology is limited to formal financial sector lending. In the case of the informal sector, it is completely absent. In this case, people use their social-economic network for gathering trustworthiness information regarding the borrower. For example, in the case of joint self-help groups (SHGs), the members know each other through the social network. This helps them in better allocation of credit through minimizing risk. In general, people in the network form belief about the actions of the individuals for different states of nature. This we call as trust. Trust is context-specific. For instance, a friend may not be financially trustworthy, therefore, it is difficult for me to trust her in financial matters. However, that friend may be very good in driving, therefore I may feel safe while she is travelling. In the thesis, we focus on one class of the trust called financial trust. And we show how this financial trust of the borrower in her social and economic network helps in accessing business credit.

3 Financial Trust and Credit Rationing

In soft information, financial trust could play a significant role in credit risk evaluation. This financial trustworthiness is much broader than relationship lending. Relationship lending helps in building trust only when there is a direct relationship between a borrower and lender, while trustworthiness may come from indirectly. For example, in a social and economic network, a lender may observe the behaviour of the borrower when she had taken credit from another lender. Thus, the source of trust of the lender may be direct on indirect. The following sections discuss the usefulness of the financial trust for the borrower in reducing credit constraint faced by the borrower due to higher asymmetry of information and non-availability of liquid collateral. In addition, the thesis discusses on benefits to lender in evaluating credit risk based on this soft information.

3.1 Financial Trust and Resolution of Collateral Issue

Lender's trust on borrower depends upon several factors. Two of them are: her own historical experience and other is how people in her social-economic network trust the individual. Sometimes getting this information is very costly. In case it becomes costly, then lenders rely only on her historical financial relationship with the borrower. If a borrower approaches a lender for the first time, then it becomes very difficult for the lender to extend credit. As discussed earlier, besides informational opaqueness, the non-availability of highly liquid collateral with small business owners limits their access for higher credits and hence their business growth (Besanko & Thakor, 1987; Thampy, 2010). Financial information reflects the ability of the borrower to pay, but the trustworthiness of the borrower shows her willingness to pay. Thus, the trustworthiness of the borrower can be used as an indicator to assess the credit risk. When these borrowers approach lenders for the credit, then lender may gather information

about the trustworthiness of the borrower. If the lender already knows the borrower, then she will use her past behaviour to assess the credit risk. In case it for the first time, she may incur a huge cost.

In this case, we design an inter-temporal calculative trust for the lender. The trust is calculated from promised and actual payment of the instalments associated with the credit. If the borrower keeps her promise about her repayment schedule, then she will build trust that will reduce the collateral need in the future. In case she fails to keep the promise, she may require 100 per cent collateral in future to access the credit. The design provides complete flexibility to the borrower to report her future expected cash flow. Since non-adherence to promise brings a huge cost in terms of higher collateral, therefore it prohibits borrower to inflate its future cash flows. Thus, if a borrower is trustworthy, the credit-constrained is reduced by her trustworthiness. Using a random simulation, the design reduces collateral need for the borrower and performs 80 per cent times compared to the benchmark model. This design helps both lender and borrower. For lender, this designed calculative trust helps in building creditworthiness and reduces expected losses. For borrower, it reduces collateral need in case she a trustworthy borrower.Chapter

3.2 Trust in Social Economic Network and Accessing Credit

Social-economic network helps in information spillover, risk diversification, household economic transactions, etc. (Wang et al., 2015). Literature has focused on the value of social-economic network as an informal mechanism of trust (Bohnet et al., 2010; Granovetter, 1985). Especially in developing countries, the financial trust helps in accessing informal credits (Turvey & Kong, 2010). For instance, in Vietnam, individuals with higher network get higher credit than individuals with lower network (McMillan & Woodruff, 1999). In case an individual defaults on the credit, she loses the trust in the social network. Therefore, sometimes it acts as collateral in securing the informal credits (Karlan et al., 2009).

In case of default, the borrower in social-economic set up loses the trust. This loss of trust reduces the ability of the individual to borrow in future. We call this social cost of default. Therefore, we can say, in case she pays back the credit, she incurs the cost of credit, and in case she defaults, she incurs social cost of default. From the perspective of trust, we define a cost known as the social cost of default. The cost reflects the reduction in social insurance, future credit access, future higher interest rate, etc. (Guiso et al., 2004). Although this cost is invisible, but it plays an important role in reducing credit risk. Based on India's household indebtedness survey data, we empirically examine the existence of this invisible cost. We find an individual has less dependence on relatives and friends although they lend at zero interest rate in fear of losing social insurance. That is, less dependence implies a higher social cost of default. Based on self-help groups' non-performing assets (NPAs) data, credit flows are higher for those regions in which the NPAs to total bank advances are lower. Thus, this empirically confirms the existence of the social cost of default.

In the next part of this thesis, a theoretical model has been introduced which considers the above discussed social cost of default to asses credit risk from the perspective of borrower's network. A lender can use borrower's network to gather the creditworthiness information regarding borrower, this will help in reducing information asymmetry partially. The thesis propose a methodology that provides a technique to aggregate financial trust of a borrower in the network. Using this the thesis analyses the role of trust and social cost of default of the borrower on credit default. The results show that trustworthiness reduces credit risk and lowers interest rate offered by the lender. This reveals the benefits of the social and economic network and its role in borrowing lending process.

3.3 Financial Trust and Borrowing Preference

Policymakers focus and put enormous effort in formalising lending institutions. Lending institutions demand hard information to extend credit. But the small business owner may require credit within less time for execution of the project. So this additional transaction cost may incentivise to approach a lending source that can provide credit within less time. In case the borrower is a very trustworthy (financially) person, then she can easily access credit from a lender who is a part of her social-economic network. Evidence for the above argument has been confirmed in China (Turvey & Kong, 2010). The social network of the borrower also helps in getting information about formal and informal lending institutions. Being motivated from Turvey & Kong (2010) study, which says, more trustworthy individuals borrow from informal lending institutions. The thesis develop a model that explains how trustworthy individuals are more willing to borrow from informal lending. A model on trust has been provided that explains how trust plays an important role in choosing between informal and formal sources of finance. The factors in the model that play a role in preference over formal versus inform lending decisions are: transaction cost in the formal lending institutions, trust of the borrower in the network, the immediacy of the credit. Results of the model shows that, a trustworthy borrower prefers informal lending institution if she requires credit immediately. A randomized simulation shows that higher transaction cost in the formal lending institutions incentivise borrowers to approach informal lending institutions for credit. Hence, the trust of the borrower comes into play when borrowers face higher transaction cost.

4 Conclusions

The thesis makes an attempt to resolve the issue of credit rationing in the presence of information asymmetry between a borrower and a lender in the context of business credits. Main findings of the thesis shows that financial trust in the social and economic network of the borrowers helps in reducing the credit constraint faced by them with less hard information and marketable highly liquid collateral. First, it models and confirms with a randomized simulation that a trustworthy borrower may require lower collateral in the future to access higher credit. Second, the lender may use social and economic network of the borrower to evaluate her credit risk. Before proceeding to the model based on social and economic network, study conceptualizes the social cost of default for a borrower in the network. In a theoretical model, the social cost of default has been incorporated to evaluate the credit risk. Our model provides insights and the importance of borrower's social-economic network in evaluating credit risk. By incorporating the trustworthiness information from borrower's network, the lender can reduce the problem of information asymmetry and hence lowers the cost of credit. Third, a model explains the benefits a borrower gets when she has higher trust in the informal credit market. The result finds that if the agent has higher social trust then it has a higher likelihood to borrow from informal lending institutions. The model also finds that the time period within which the agent needs the credit affects the decision of agent in an ambiguous manner. Besides, the model also explains, if a borrower is investing in a safer project then she has the incentive to borrow from the informal lending.

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